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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/895,466	06/29/2001	Robin Budd	EMC-00-066	6561
24227	7590	07/24/2006	EXAMINER	
EMC CORPORATION OFFICE OF THE GENERAL COUNSEL 176 SOUTH STREET HOPKINTON, MA 01748			PARK, ILWOO	
			ART UNIT	PAPER NUMBER
			2182	

DATE MAILED: 07/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/895,466		BUDD ET AL	
	Examiner		Art Unit	
	Ilwoo Park		2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/11/06.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 6 and 8-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, and 8-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1, 3, 5, 8, and 11 have been amended and claim 4 has been canceled in response to the last office action. Claims 1-3, 5, 6, and 8-16 are presented for examination.

Response to Arguments

2. Applicant's arguments with respect to claims 1-3, 5, 6, and 8-10 have been considered but are moot in view of the new ground(s) of rejection.

3. Applicant's arguments filed 5/11/2006 with respect to claims 11-16 have been fully considered but they are not persuasive. In the remarks, Applicant argues in substance that Lozowick fails to teach or suggest that the packets are stored in a buffer when the network is available; rather, Lozowick teaches that the data are always stored in a buffer, independent of the status of the buffer. However, the Examiner respectfully disagrees. Lozowick clearly teaches [col. 2, lines 39-44] that the packets are stored in a buffer when the network is available and shows that the buffering is dependent upon the unavailability of the network. The current claim does not include the limitation explaining dependency of 'the status of the buffer' or 'when the network is available'. Thus the arguments are not persuasive.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 5, 6, and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohran et al. [US 5,812,748] in view of Vinther et al. [WO 92/18931].

As for claim 1, Ohran et al teach in a computer system having a plurality of computers connected to a storage system. Each computer having software capable of sending and receiving network information, a method for providing continuous availability [col. 1, lines 20-30] of the network information without use of the network [e.g., ref. No. 2102 in fig. 5] comprising the steps of:

receiving [col. 2, lines 12-24] transmission packets into an internal thread [col. 4, lines 12-19; col. 11, lines 6-14] of the network and placing the transmission packets into a queue determined by the type of transmission packet;

upon determination [col. 7, lines 20-29] of the unavailability of the network and the determination [col. 2, lines 25-29] that the transmission packet is a write packet [col. 13, lines 3-8], copying [col. 7, lines 53-56] the transmission packets into a buffer; and the internal thread writes [col. 8, lines 14-20] the contents of the buffer to the storage system.

However, Ohran et al expressly disclose upon filling the buffer to a predetermined point waking the internal thread to process the filled buffer. Vinther et al teach a method for providing continuous availability of the network information without use of the network [e.g., ref. No. 19 in fig. 1] comprising the steps of copying transmission packets into a buffer [page 7, lines 5-14], upon filling the buffer to a predetermined point waking [page 17, lines 28-31] an internal thread to process the filled buffer, and the internal thread writes [page 7, lines 20-23] the contents of the

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buffer to the storage system. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Ohran et al and Vinther et al because they both teach mirroring network transmission packets received, buffered, and finally stored into a storage system and the Vinther et al's teachings of upon filling the buffer to a predetermined point waking an internal thread to process the filled buffer would increase efficiency in buffering [Vinther et al: page 14, lines 12-18] rather than buffering all data [Ohran et al: col. 7, lines 53-56].

6. As for claim 2, Vinther et al teach prior to the internal thread receiving transmission packets, a client thread submitting the transmission packets into a write buffer [page 7, lines 5-8].

7. As for claim 3, Vinther et al teach calling, by the client thread, a transport data function, wherein the transmission packets are extracted from the buffer [page 7, lines 8-12].

8. As for claim 5, Ohran et al teach configuring the storage system to include a receive volume and a send volume, wherein the contents of the buffer are written to a send volume; copying the contents of the send volume to the receive volume [e.g., col. 3, lines 13-20].

9. As for claim 6, Ohran et al teach the receive volume and the send volume are respectively located on first and second logical volumes of the storage system [e.g., fig. 7].

10. As for claim 8, Ohran et al teach configuring the storage system to include a send volume [e.g., computer system 2110 in fig. 5], configuring a second storage

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system to include a receive volume [e.g., computer system 2120 in fig. 5], wherein the second storage system is geographically removed from the storage system; writing [col. 8, lines 14-20] the contents of the buffer to the send volume; and copying [col. 8, lines 14-20] the contents of the send volume to the receive volume.

11. As for claim 9, Ohran et al teach returning the internal thread to a sleep state after the contents of the buffer are written to the send volume [col. 4, lines 12-13].

12. As for claim 10, Vinther et al teach copying the contents of the send volume to the receive volume occurs upon a command from one of the plurality of computers [col. 13, lines 3-8].

13. Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai [US 5,948,079] in view of Lozowick et al. [US 5,228,083].

Regarding claim 11, Tsai et al. teaches a computer system having a plurality of computers connected to storage system [see Figure 1, elements 104, 108, 110, 106, 102, 114], each computer having software capable of sending and receiving network [element 110] information. Tsai et al. teaches method for receiving transmission packets and placing packets into a queue determined by the type of transmission packet [see col. 2, lines 45-60, "buffer"]. This step is accomplished by the reference by having descriptor for the packet [see col. 4, lines 1-7]. Tsai et al. does not teach writing the packets upon unavailability of the network.

Regarding this limitation, Lozowick et al. teaches a method in which inbound packets are stored in a buffer [see col. 5, lines 25-29, 51-58]. Therefore, if the connection to the network unavailable but an interface available, packets are

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transmitted out of the buffer. Therefore, one of ordinary skill in the art at the time the invention was made would have been motivated to modify the Tsai et al. reference in order to increase efficiency in flow control between the host and the peripheral and between the peripheral and the network of the Tsai et al. reference since both references have the half-duplex type of network [Tsai et al: col. 1, lines 45-47 and Lozowick et al: col. 2, lines 47-59].

14. As for claim 12, Tsai et al. teaches reading the volume after it is written [see col. lines 6-28].

15. As for claim 13, Tsai et al. teaches a plurality of applications [see Abstract]. Nonetheless, combination of references does not teach clustering specifically. However, one of ordinary skill in the art would have been motivated to implement clustering as part of the plurality of applications, since is well known in the art.

16. As for claims 14 and 15, the combination of references teaches a computer network [see Tsai al., Figure 1]. It is well known in the art that the Internet is an example of one of the networks that would be included as part of the prior art disclosure.

17. As for claim 16, the combination of references [see Tsai et al] teaches a storage system having "send" and "receive" section [see Figure 3]. The contents of the buffer are written to a second volume [see Figure 3, "312", "316"; col. 3, line 67]. The combination of references does not teach separate volumes. Nonetheless, it would have been obvious to position the elements in the system, as part of a network, geographically apart from each other.

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18. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohran et al. [US 5,812,748] in view of well known in the art.

As for claims 14 and 15, Ohran et al do not explicitly disclose the internet. It is well known in the art that the Internet is an example of one of the ubiquitous networks that would be included as part of the prior art disclosure in order to increase adaptability to the ubiquitous network.

Claim Rejections - 35 USC § 102

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

20. Claims 11-13 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohran et al. [US 5,812,748].

As for claim 11, Ohran et al teach in a computer system having a plurality of applications, in communication with a storage system, each application having a process capable of sending and receiving information over a network to and from the plurality of applications, a method for providing continuous availability [col. 1, lines 20-30] of the network information comprising the steps of:

recognizing [col. 7, lines 20-29] that the network between the applications is unavailable;

in response to the unavailability of the network, writing [col. 8, lines 14-20] the network information from one of the applications to a first volume;

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copying [e.g., col. 8, lines 14-20; col. 12, lines 50-54] the network information written to the first volume to a second volume system;

reading [e.g., col. 4, lines 15-19; col. 12, lines 58-61; col. 14, lines 50-54] the network information from the second volume.

21. As for claim 12, Ohran et al teach reading the network information in less than a predetermined period of time after it is written to the first volume [col. 2, lines 49-60].

22. As for claim 13, Ohran et al teach the plurality of applications performs clustering functions [col. 16, lines 15-17].

23. As for claim 16, Ohran et al teach a second storage system geographically remote from the storage system, wherein the first volume is on the storage system and the second volume is on second storage system [figs. 7-9].

Conclusion

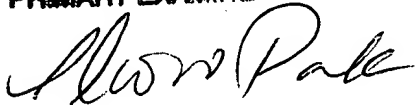
24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ilwoo Park whose telephone number is (571) 272-4155. The examiner can normally be reached on Monday through Friday from 9:00 AM to 5:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Huynh can be reached on (571) 272-4147. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ILWOO PARK
PRIMARY EXAMINER



Ilwoo Park

July 18, 2006